

Interactive White Boards in Portuguese primary schools The teachers' view

Maria José GONÇALVES

**Departamento de Ciências Sociais Aplicadas – UIED
Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa
Monte de Caparica, 2825-114 Caparica, Portugal**

ABSTRACT

Focusing on the use of Interactive Whiteboards (IWBs) in primary schools in Oeiras municipality, this article presents primary teachers' views, from their experience, on the implementation of this innovation as a resource for the teaching and learning processes. IWBs have been recently launched in the framework of a major program aiming the technological modernization of Portuguese schools, in order to promote the use of ICT in teaching and learning, as well as in school management. Findings show that teachers are enthusiastic about Interactive White Boards because they really believe their pupils learn better and in a more joyful way. However, they draw attention to the need of training in order to fully exploit the potential of this resource.

Key-words: Interactive White Boards; ICT in schools; teaching and learning resources; teacher training

INTRODUCTION

In March 2000, during the meeting of the European Council, in Lisbon, Portugal, the Heads of member states represented there launched the so-called "Lisbon Strategy" aimed at making the European Union (EU) the most competitive economy in the world by 2010. This strategy, developed at subsequent meetings of the European Council, rests on three pillars: economic, social, and environmental. The social pillar was designed to invest in human resources and combat social exclusion, therefore the member states are expected, among other developments, to invest in education and training. In August 2008, the Portuguese government approved The Technological Plan for Education (PTE), the largest program of technological modernization of Portuguese schools, aiming to promote the integration and use of ICT in teaching and learning, as well as in school management. The main objective was to place Portugal

among the five technologically most advanced countries in the technological modernization of education in 2010, when it is expected that every school will have broadband access, high speed Internet, and two students per computer. The PTE is supported by a network of partners, among them the municipalities that joined the PTE model and are expanding it to their own networks of primary schools. Two relevant technological resources were recently introduced in the Portuguese primary schools – Magalhães (Magellan) laptop and Interactive White Boards (IWBs). In the context of the Technological Plan for Education, Oeiras municipality launched the project RISE – Integrated Network of Educational Services – to support primary schools and kindergartens within the municipality, with a total of 1 750 children. The goal is to provide services, content and platforms to make teaching more attractive, learning more motivating, monitoring of teachers and parents closer, and a more efficient administrative management, thus making every classroom a center of communication with the world. The project has two distinct components: one is the creation of a data base on education in the municipality – to provide information and services to the educational community; the other one is the construction of the technological infrastructure of public primary schools and kindergartens, equipping them with technological resources – IWBs, network connection broadband to Internet high speed and a higher number of computers and recent technologies. The investment of five million Euros, fully supported by the municipality, is being implemented over a three year period – 2007-2010. An agreement was made between Oeiras municipality and Microsoft Portugal to promote both "Magalhães" initiative and the implementation of IWBs. Accordingly, actions targeted to the educational community – pupils, parents, and teachers: face-to-face and/or distance training delivery for pupils, parents and teachers; creating and delivering pedagogical resources for teachers; training in digital literacy and Internet for parents, as well as support to the development of pupils' ICT skills are being implemented.

Especially focusing on the use of Interactive Whiteboards in primary schools in Oeiras municipality, this article presents primary teachers' views, from their experience, on the implementation of IWBs as a resource for the teaching and learning processes.

IWBs are large, touch-sensitive boards, which control a computer connected to a digital projector. Often referred to by brand names such as "Smartboards", IWB technology comprises a computer linked to a data projector and a touch-sensitive board. The image generated by a computer is projected onto a touch sensitive screen, where a touch is the equivalent to a mouse click. Each IWB within a school can be networked together allowing files to be shared between classes, each with access to the Internet (Kennewell, 2006). Software provided with the board or obtained separately offers a variety of functions, such as flipcharts, dry-wipe boards, overhead projectors, slide projectors, and video-players, and others which have not previously been possible on a large, vertical display [3]. As some authors remarked [8], IWBs are a relatively new technology to education. Therefore, there is still a lack of consistent academic studies, although a number of reports and summaries of small-scale research projects mainly undertaken in the UK, USA, Canada and Australia can be found. In Portugal, the introduction of this technology to education is much more recent. Consequently, literature on its impact on learning and teaching processes is much scarcer. However, at least three Master thesis authors [2], [5] and [6] chose IWBs for their research projects. Besides, a few articles have been published, although no one specifically focus on the use of this technology in primary schools.

RESEARCH QUESTIONS AND METHODOLOGY

This study case was guided by the following research questions, related to the perceptions of the interviewed teachers:

- 1 – What do primary teachers think of the massive use of ICT in primary schools?
- 2 – To what extent are IWBs a good resource for teaching and learning?
- 3 – Is there some distinctive feature of IWBs compared to other technological resources?
- 4 – What are pros and cons of IWBs in the educational process?

In order to fully understand the social, political and educational context in which IWBs, as a technological innovation, were introduced, the following documents were analyzed:

- The documents relating to the Lisbon strategy
- The Technological Plan for Education
- Project RISE

All this documentation is available through the site of the Portuguese government. The project RISE is available in the site of Oeiras municipality.

In order to obtain primary teachers' opinions and perceptions, according to their experience of the use of IWBs, in-depth semi-structured interviews were conducted to the four teachers of one school of the municipality where this innovation is being implemented from September 2009. All these teachers had a couple of two-hour sessions training in October 2009, and are taking a training course of one academic year, one session per week, except one who had already entered a training in mathematics, but who is willing to have more training in IWBs as soon as possible. Other than these face-to-face interviews, video recorded interviews on this same topic, conducted by the Educational Services of Oeiras municipality to other five primary teachers, through a random selection in primary schools of the community, were the object of content analysis, from which common themes were identified.

MAIN FINDINGS

What do primary teachers think of the massive use of ICT in primary schools?

All respondents remarked the relevance of the introduction of ICT in primary schools, and especially emphasized the importance of interactive whiteboards. In their opinion, technologies can and should be complemented in the teaching and learning processes. The reasons presented to support these opinions are the fact that *today's society is very technical, we are in the communication era*. Because of that *it would be inappropriate to teach without technology*. Besides, these teachers believe that ICT prepares children for the next schooling cycle, when they will have to be able to search for relevant information and share it. "When entering the fifth grade, comparing a child who already had all these resources in primary school with another one who did not, and is just starting with ICT, there is a huge difference!"

On the other hand, it is also referred that both in the course of their schooling, and later in their professional lives, young children of today will need to be able to use a computer, to seek out and select information, and to have ICT skills. Teachers also report that ICT have improved the learning in the sense that they fit into the everyday pupils' context. Some children are already quite keen on ICT for their age: "Nowadays, a pupil in the first school year, with the support of an adult, can do a small research on the Internet". Interviewed teachers are aware of the need of innovation and they constantly look for it: "If we maintained the old framework, just using the paper notebook, rubber and pencil, we would not go too far. I'm always looking for new things". In what concerns IWBs, when asked how this tool falls into other technologies,

teachers believe that *it's all linked to computers*, and that interactive white boards can replace some of the technologies they previously used in the classroom: radio, recorder, television, VCR and overhead projector. But everything is connected to computer use, and this shapes the present life context of children. One teacher speaks about his experience: "I attended TeleSchool in my 5th and 6th grades. At the time, my teacher was using the recorder. And there were teachers who had difficulties in using the recorder and we, pupils, would teach them how to. And now the same is happening to me. I wonder: I'm 30 years old, I'm not old, but I'm overtaken by them. They handle technologies very well. I think it's kind of intuitive. Initially, I was doing some activities in the IWB and, sometimes, I was looking at it... and they were the ones who explained to me how it should be done. Now I'm going through it: when my teacher did not know how to use the video..." This episode can be a paradigmatic reason to explain why all respondents feel that their knowledge updating must go along with their careers, otherwise "we'll be overtaken". Teachers do not see technology as a loss, in any case, but rather as an additional valuable resource, because it depends on the way you manage resources in the class: "Since you are the one who manage that, it can be another resource; it does not even need to be the main one. The teacher seeks to take full advantage of the resources he/she has. But you do not lose anything!"

To what extent are IWBs a good resource for teaching and learning?

The introduction of IWBs is recent, they were installed in early 2009, so it ends up being a novelty and teachers still do not have much experience with them. Even so, all respondents view IWBs as a valuable resource, both for learning and for teaching. They believe IWBs are particularly useful in the three major areas of study: Environmental Studies, Mathematics and Portuguese. And it seems already difficult for them not to use this tool in their classes: "It's already upsetting, a disorder for me if there is no IWB in the room or if it is malfunctioning". According to this teacher, all his colleagues share the same enthusiasm: "I do not know anyone who has an IWB and does not use it, because it is a good tool. Teachers are motivated to use it and they do!" Another one declares: "I only see pros in the IWB, perhaps there are negative aspects, and I do not see them, at least for now." And although a teacher argues that it is "a resource like any other one", she adds that "there is a whole amount of things that you can do with IWBs that now I'm still exploring now. If IWBs are well explored and well used, they can give much, much! I still do not know, only now am I just starting to know". One teacher declares that she did not give up the old board. IWB and the traditional board complement each other, they are both important. Besides, she called the attention to the acquisition of the fine motor skills of writing that is why

"we cannot just write on the computer". However, another colleague refers that since the IWB has the same potentialities as the traditional one, she almost gave up using it in favor of the interactive whiteboard.

IWBs AS A TOOL FOR TEACHING

Teachers think that the IWB is added value for the teacher, taking into account that "when you know how to use it you waste very little time transmitting knowledge to pupils". In a normal, everyday class, "it's easy for us to design schemes for labelling, we can make our own worksheets, project them and correct them, the same sheet as the pupils', and it is possible to write upon". Also important is the possibility of doing a collective research on the Internet, where the whole class can participate: "We used to have to resort to the computer screen and gather a small group around it, not now, as soon as we project on the IWB, the debate of ideas arises, and everyone is viewing at the same time". These statements support some conjectures [3] that IWBs have been rapidly adopted in comparison with more personal technologies *which integrate less readily into traditional teaching methods*. IWBs are also said to support lessons planning and the development of resources. From the outset, the experience as a teacher who worked with and without IWBs turns out to be much easier now: "I started to view planning in a different way, preparing classes differently, including the IWB. I started using the computer much more often – schemes to introducing lesson contents... using the image becomes easier to explain the content to pupils". The idea that IWBs make the teacher's work easier is unanimous. For example, a teacher can prepare a worksheet at home to work with pupils the following day, and instead of taking a photocopy of it, they can store it in a pen disc, insert it in the IWB, and pupils look at it directly, and solve it in their notebooks. Much photocopying can be avoided this way. Also projecting Power Point is easier. Either they do their own Power Points or they search in the Internet for topics being covered in class and use them. And last, but not the least – teachers remark this as one of the most important uses of IWBs – they can access the site of PNL - National Reading Plan – an excellent digital library, in the teachers' opinion, and chose a book which is immediately made available to everyone and can be worked collectively. "There came a time when I almost completely left the other board, as the IWB has the potential to replace practically all the functions the old whiteboard did".

IWBs AS A TOOL FOR LEARNING

Teachers think the success of IWBs is mainly due to motivation, interactivity, playful learning, the possibility of meeting the pupils' interests, and also because they allow children to move in the class in order to participate in the activities: they can stand up and touch the IWB,

move pieces from one place to another, and that makes classes very enjoyable. Pupils often show they feel happy with the use of IWB: “once, a pupil told me: lessons pass so quickly this way! They are not tiresome. And this is such a good sign!” Some authors [8] also report that pupils’ motivation is the most widely claimed advantage of IWB because lessons are more enjoyable and interesting. The same authors also refer flexibility and versatility; interactivity and participation. On the other hand, teachers of the present study believe that IWBs are a way for school to compete with the external world and to motivate children to learn: “Today’s society has evolved and the children we have need very attractive things and the IWB is very appealing... because outside school they have very attractive things, and if school is not appealing, it becomes uninteresting”. Teachers stress that in their daily lives pupils have the presence of a lot of technology: they play with electronic games, they have computers, if only the Magellan. The use of technology in the class, namely the IWB, is to meet their reality, “to speak their language”. This feature can compete with the stimuli they have at home, while a sheet of paper is nothing compared. So, teachers manage to use both resources: on the one hand, they use motivating technologies, “that allow other possibilities”, where pictures can be easily displayed for the whole class. At the same time, they make pupils write on their notebooks. “ICT is more attractive, but there is also the written work than can be not so attractive... although it can be attractive too... I think they enjoy everything that has movement... It’s good to diversify.” Resources on the Internet can be accessed and used by the pupils who can thus work at home. They can also access by themselves the digital library of the NRP, which is very popular. In the classes, “they themselves ask for it. When we are one or two days without going to the site (of the digital library) they ask to go: *Teacher, look for that story in the digital library you had promised to show us.* The IWB is already part of the routine of the classroom. Pupils give suggestions to search the web for the teacher to project on the IWB. “Initially for them, the interactive whiteboard is regarded almost as a game. It is time to play. We look for material on the Internet, but I feel that when I turn the IWB on, for them is playful; it still is *let’s play*.”

Is there some distinctive feature of IWBs in relation to other technological resources?

The opportunity offered by IWBs for pupils to watch and listen at the same time - hearing and vision simultaneously – is considered essential for primary school children. The interactivity, the possibility of playing, moving with their hand acting like a mouse, is almost magic for them. Moreover, worked items can be stored. Thus, educational material will not be lost and can be re-used later. The interactivity with the pupils is another feature pointed out as distinctive. These testimonies corroborate other studies that stress

motivation, interactivity and diversity [2] and [6]. Collective surprise and playfulness are also two elements that are mentioned: teachers manufacture some materials that are a surprise for pupils who do not know what will appear on the IWB, no one knows what can happen. According to these professionals, IWBs motivate pupils, captivate them. In terms of reading and writing the IWB can be a good asset, but two situations have to be considered: for beginners – especially those in the first year, the IWB can be a facilitator because there are several sites on the Internet, even from the digital library, where children can view a story and the text will appear at the same time. By viewing, they will adapt to the sound of the syllables and words. There are also the use of word games, word and image association, phrase construction, and all this in a playful way. As children grow older, they still like viewing. However, they need to read full works of literature. IWBs also provide the possibility to search the Internet in the class as a whole: “Today we have been watching the Portuguese coast by satellite; there is no other way for the whole class to see it”. Teachers also take advantage of this opportunity when the whole class is searching the web to tell pupils about the advantages and risks of surfing the Internet, to teach them how to safely and effectively navigate, what to do and what not to do. As far as lesson planning is concerned, teachers also view IWBs as valuable facilitators. As already shown [2], these teachers also value the opportunity that the interactive whiteboard provides to store and retrieve the content previously taught.

IWBs – ISSUES AND UNEXPECTED BENEFITS

Issues

The biggest issue is linked to the lack of **training**. Some authors [8] identify the need for adequate training in order to use the IWBs to their full potential as one of the most frequent issues raised in their research. Others [7] also stress the relevance of training teachers for ICT in general and IWBs in particular. In our study, it became evident that teachers less trained on the use of IWBs feel that they have an asset in the classroom, but they lack a lot of information to use its full potential: “Initially it was like this: I have the interactive whiteboard; what now?” Shortly after the installation of IWBs, teachers had two training sessions of about two hours, on the basic operation, “just some technical information, to know what the buttons are for, some potentialities, but we did not experience the IWBs. It was rather theoretical, just enough to understand that the IWB had a lot of potential to work with pupils and some basic principles of operation. For someone who does not know much about informatics it was too little. Just enough to use the basics - design, some existing resources in the notebook program, but not enough to build material”. Relating to

this matter, it was found that [3] initial training by companies and suppliers with their “slick presentation and high-quality prepared materials” were successful in «firing» teachers with initial enthusiasm. Other studies also emphasize the need for appropriate training [1] and [7]. Still, even with such insufficient training, teachers in our study began to experiment and the lack of additional training did not frustrate them because they realized the potentialities of the IWB, although they did not know how to explore it in all its dimensions. “Then there are the day-to-day difficulties, when we work with pupils. From the moment I've had training, I am increasingly able to use the IWB. This training is giving me the knowledge I needed. The information is essential”. In the framework of the program Rise, Oeiras municipality is providing training for primary teachers of the community. This training was requested by the teachers who joined and asked the municipality they needed training in interactive whiteboards. Consequently, training is voluntary.

Unexpected benefits

1- Information and knowledge sharing

Sharing information and knowledge has been crucial for these professionals. “Of course, it always has to do with an emotional bond with colleagues”. Teachers declare they have been sharing for their own initiative. They have the email addresses of colleagues of the same school, and of others with whom they had worked in other schools, “and if we see something interesting, we send”. Colleagues will nicely send e-mails each other. “We enter the staff room and... listen, yesterday I received a very nice Power Point, I will send it to you”. This has already become a routine. “When you discover some work on the web (there are already many works on the Internet designed to primary school teachers), we give others the site. I also do self-training, without waiting for formal training from the Ministry of Education or the municipality. We also train with us, we learn from each other. We discuss, ask each other questions, without fear of being judged or evaluated.”

2 - Managing time

Currently, Portuguese primary teachers feel overwhelmed with workload; even by a series of bureaucratic work they think it should not be their task. And there is still training to do on IWBs. However, respondents think that training is crucial and that it does not steal their time. On the contrary, because it is added-value, it gives additional time, as it reflects on more meaningful learning for pupils. “If I am not yet very familiar with IWBs, this forces me to a more intensive training, but I do not see it as a negative aspect, because I know my pupils will learn more and better. If I do not switch on the IWB, my pupils will lose so much, I will lose so much, we all become poorer, so even if you *waste* some time preparing classes, this is a good thing”. Teachers realize that when they know how to use IWBs, there is a time gain. “For

example, when I did not know much about IWBs, I wasted a lot of time to do an activity for a class which in the classroom practice lasted for such a little time that I thought: I have spent such a long time preparing this material and it passed so fast in the class! But from the moment I am faster to build activities and use resources, it is time gain. In class it was difficult to manage time, because even in the primary school, we have to allocate a given time to Mathematics, or to Portuguese... we need more time initially, because we are not very used to create materials for IWBs. Yes, it is additional work, but in a few time it will be a facilitator“. This goes in line a Report [1] that states that effectively integrated ICT may help alleviate some pressure related to task loads. According to the same report, the use of IWBs has been shown to positively influence the planning, delivery and revision of lessons material, resulting in decreasing task times and work load, as well as reduced anxiety.

FINAL REFLECTION

Interviewed teachers unanimously agree that the introduction of IWBs in primary schools is an added value for the learning and teaching processes. Motivation, interactivity, diversity, and versatility are the most referred pros, as far as pupils are concerned. Teachers are enthusiastic because they really believe their pupils learn better and in a more joyful way with this technological innovation that meets their daily contexts, since they are used to ICT in their everyday lives. IWBs can compete, in the view of these professionals, with the stimuli they constantly have outside the school.

As far as the teacher's work is concerned, the opinions showed that even if it will take some more time to get to know how to use the full potential of IWBs, in the long run this will be translated into shorter time planning. Besides, the fact that the board can store didactic material that can be re-used later is also to mention. On the other hand, they had to learn how to manage lessons time in a different way.

Findings also suggest that IWBs have distinctive features compared to other resources. On the one hand, they allow teachers to work collectively with the whole class on the same subjects and, on the other hand, to meet individual needs in an easier way, giving each pupil the opportunity to actively intervene and interact

The only issue that was mentioned was the lack of training which, for these teachers, is being supplied now. However, a positive collateral effect happened: teachers started their training with each other, shared resources and materials, lessons learned, thus also strengthening their emotional ties, and ultimately improving the school culture.

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